are various means, too, for preserving the secrecy of correspondence; the most curious of which is, that the writing may be rendered nearly invisible in all parts but the direction, until its delivery to the person for whom it is designed."

The *Spectator* bewails the pending fate of St. Martin's-le-Grand—a fate now threatening to be consummated by that very instrument, the electric telegraph, by whose aid it so recently 'tinkered' time with patch upon patch, but all, unfortunately, *in the wrong direction*, widening the 'mean' gap *obviously* in place of narrowing it to its minimum, as we had long hoped *would* be done, by those very means, so absurdly abused, which thus are thought to be about to make a retributive visit, on the wings of insulted Time himself, to the 'grand,' but presumptuous usurper of his solar throne. In earnest, however, we rather doubt the clairvoyance of our respectable contemporary, the *Spectator*, in his seemingly serious prophecy that ere long St. Martin's 'occupation' will be 'gone.' The old electro-telegraphic prices will, at all events, first have to *concentrate* their power and cope with a potent antagonist; and certainly the P. O.'s will not be extinguished by their antitheses till then—the tendency of late having been all the other way.

ARCHITECTURAL MODELS.

We saw the other day, at the residence of the artist in Lower Grosvenor-place, a model by Mr. T. D. Dighton, of a mansion designed to have been erected at Gatton, by the late Lord Monson, which seemed to us nearly the perfection of such work. The details are accurately made out, and the ornamental portions, capitals, friezes, &c. beautifully executed. In the design of the building, Mr. T. Hopper was associated with Lord Monson, and the result is a well-proportioned and elegant whole. The principal front displays a large Corinthian octastyle portico, with, a carriage drive through it, and the building is crowned by a tambour and cupola.

Mr. Dighton's models are well known to the profession, and have given him a reputation which will be further increased by the work to which we are alluding. The demand for architectural models of a high character, requiring patient devotion of time, knowledge of architectural details, and great mechanical skill, is so small as to offer little inducement in a pecuniary point of view to men fitted to produce them. In this age of casting, electrotyping, and otherwise reproducing, a hundred pounds, which would, perhaps, little more than pay for the time and talent spent on the model before us, would seem a large sum, and be willingly paid only by a very few.

INSTITUTION OF CIVIL ENGINEERS.—

April 18.—The President in the chair. The paper read was the second part of a communication made in the year 1841, descriptive of the "Bann Reservoirs, county Down, Ireland," by Mr. J. F. Bateman. The first part, of which a short abstract was read, gave the object of the construction of these reservoirs, which were undertaken with the view of regulating the quantity of water in the river Bann, and more effectually supplying water-power to the increasing establishments on its banks; this river is, from the naked character of the Mourne mountains, among which it rises, naturally liable to the greatest irregularity in its volume; devastating floods frequently pour down the channel, where a few hours previously there was not sufficient water for agricultural purposes: greatly injurious as this must have been to the agriculturist, it was infinitely more so to the mill-owners, who depended entirely upon water-power for their manufactories.

Mr. Fairbairn was consulted on the subject; he examined the locality, and advised the formation of reservoirs. The author was then appointed the engineer, and acting, in some degree, upon the suggestions of his predecessor, whom he continued to consult, the works were undertaken, which were described in the present paper. It was shewn, by calculation based upon actual experiment and observation of the quantity of water received, stored, and delivered from the reservoirs, that the works had increased the value of the mill-power of the river Bann full five fold, at a comparatively very insignificant cost, as the actual expenditure for the works at Corbet Lough did not exceed 3,300*l*.

April 18.—The paper of the evening was a series of "Observations on the Resistance of Railway Trains at different Velocities," by Mr. Daniel Gooch, of the Great Western Railway.

He shewed by experiments that the total atmospheric resistance to a train weighing fifty tons differed but slightly from that to a train of one hundred tons weight, if the carriages were small and the train long, in the one case, and the reverse in the other.

The general result of the diagram of resistance, with trains of one hundred tons, and with fifty tons, shewed that the resistance calculated by the narrow gauge formula with a fifty-ton train, at sixty-two miles and a-half per hour, was thirty-seven pounds. With a train of one hundred tons, by the same formula, at sixty-one miles, it was thirty-one pounds and a half. The broad gauge resistance, with a train weighing fifty tons, at sixty-two miles and a half per hour, was under twenty-three pounds; and with a train weighing one hundred tons, at sixty-one miles and a half per hour, was twenty-two pounds and a half.

The author concluded his paper by saying that it appeared to him to be necessary that, before any general formula for calculating the resistances to railway trains could be made, the value of the following elements, necessary in such formula, should be determined by experiments.

1st. The axle journal friction, at different velocities, and with different weights, per square inch of journal surface.

2. The resistance to the rotation of the wheels and axles per pair at different velocities and with different diameters.

3. The resistance due to the rolling of the wheels upon the rails, with different weights upon them and with different diameters.

4. The resistance due to the passage of the train through the atmosphere, at different velocities, with different proportions of weights and lengths and breadths of train.

5. The resistance due to the oscillation or unsteady motion of the train, at various speeds.

New Books.

The Port and Docks of Birkenhead. With maps, plans, &c. By Thos. Webster, M.A., Barrister. Chapman and Hall, Strand.

Birkenhead is an example of what may be done toward effective sanitary arrangements, convenient streets, public buildings, parks, and promenades, when men of judgment and taste undertake the founding of a new city. At present, Birkenhead languishes. It hoped to flourish on the overflowing resources of Liverpool and Manchester. It incurred vast expenses in providing accommodation for that overflow, but having been somewhat over forced, and temporary causes having depressed the springs of commerce in those marts of industry even below the usual water line, Birkenhead without minerals, without manufactures, without a rich agricultural district at its back, in fact, without internal independent sources of commerce, finds its railroads little used, its shops unlet, its warehouses empty, and its docks silent. But enough has been done to ensure to Birkenhead, as a continuation—an expansion of Liverpool, a pre-eminent position as a great mercantile and naval port.

The opposition, on the part of the corporation and dock trustees of Liverpool, to the establishment of docks at Birkenhead, led to long parliamentary contests, and made what may be called the "Birkenhead case," a matter of importance and notoriety. Mr. Webster, who was one of the many counsel engaged in it, thought it very desirable "that the case upon which Parliament had been induced to pass the several Bills, that the motives by which the Crown may be presumed to have been influenced in making a free grant of more than 250 acres of land, and that the history of the various transactions, so far as such transactions had been matter of public inquiry, should be presented in a form accessible to all who were interested in the subject,"—and hence the work before us, which, as the author says, is not to be regarded as an abstract of the whole evidence, but of the evidence given in support of the Bill, with so much of the former as is necessary to make the case intelligible. It contains, as a matter of course, many valuable observations on the tides in the Mersey, the wants of commerce, and the manner in which it may be encouraged by affording adequate dock accommodation. A clue to the way in which some of the founders of Birkenhead have made their enormous fortunes is found in the following sentence of the evidence given by the engineer, Mr. Rendel:—"Since the works have been in contemplation, the value of land has increased enormously; something like 4,000*l*. to 6,000*l*. per acre; before, it was worth little or nothing,—land that was sold before the passing of the first Act at 7*s*. 6*d*. per square yard, has, since that Act, been sold at something like 3*l*. or 4*l*. per square yard!"

The estimated cost of the works in the docks, &c., is two millions.

Correspondence.

ARCHITECTURAL EDUCATION.

Sir,—A young man in whom I am interested is about to enter this university, with the intention, after taking his degree, of following the profession of an architect. He is what is technically called a public-school boy, and combines, with a very fair attainment in the studies pursued there, a taste, and I hope an ability, for the practice of architecture.

Now, the question to which I would call your attention, or that of any of your correspondents who may be inclined to assist me, is this: setting aside all predilections on his part for either one or the other, to which of the two branches of study pursued at the university, *classics* or *mathematics*, I should, with the best chance of success, advise him to direct his attention, in order to secure the greatest advantages which the university course holds out for following up that profession which he has been led by his own choice to adopt.

Hoping that you will admit the importance of the question to be a sufficient excuse for intruding upon your valuable time,

I remain, Sir, &c. A. B.

Trinity College, Cambridge,
April 25, 1848.

*** We insert the above with the view of eliciting opinions on the subject: there will probably be little difference, however, between them.

Miscellanea.

A new Stone and Marble Hand-saw has been patented by Mr. Hutchinson, the patentee of the mode of indurating building materials, lately noticed in The Builder. The frame is mounted on a pair of grooved rails, regulated laterally by screws, while the frame itself can be adjusted vertically, and, being balanced by a bob-weight and pulley, can be moved backwards and forwards by hand more easily and smoothly, and with greater effect, by a boy of ten years of age, it is alleged, than the usual hand-saw can by the most powerful and experienced workman. Several saws can be worked and several slabs cut in parallel lines with the same frame, and the work is not so liable to be injured by vibration as with the more expensive steam saw. Provision is also made for the supply and regulation of water and sand, and the machine is covered by a portable shed.

The Worcester Corn-Market.—Of five designs sent in, two by Mr. William Hopkins, of Worcester, have been chosen. Both are of Grecian character, but the one preferred is the plainest, the expense of a tetrastyle Doric portico in the other being objected to. The interior in both chiefly consists of a room 97 feet long by 40 broad and 40 high, exclusive of a dome light, which has been adopted as the nearest approximation to an open air light, free from shadow or sunshine. The Worcester Journal, on public grounds, regrets the rejection of the more ornamental design, and recommends a further attempt to meet the additional expense.

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